METHOD AND APPARATUS FOR FORMING LATERAL ELECTRICAL CONTACTS FOR PHOTONIC CRYSTAL DEVICES

ABSTRACT OF THE DISCLOSURE

[0042] The present invention is a method an apparatus for forming lateral electrical contacts for photonic crystal based structures. In one embodiment, a photonic crystal structure comprises a substrate having a plurality of apertures formed therethrough, a waveguide formed by "removing" a row of apertures, and a pair of lateral electrical contacts, each spaced a distance away from the waveguide by at least one row of apertures. The optical mode of the waveguide is confined in the lateral direction by the at least one row of apertures. Thus the apertures provide optical isolation for the electrical contacts, which minimizes losses due to absorption of light by the contacts. The contacts may be used to apply voltages for thermo-optic control of the waveguide, for current injection, or for configuring the waveguide as a photodetector, among other applications.